ABSTRACT OF THE DISCLOSURE

COPPER COMPOSITIONS, PROCESSES AND PRODUCTS DERIVED THEREFOM

The present invention is a persulfate microetchant composition especially useful for removing impurities from copper surfaces during fabrication of microelectronic packages. The microetchant formulation is characterized by its ability to selectively clean copper in the presence of nickel, nickel-phosphorous and noble metal alloys therefrom. Furthermore, no deleterious galvanic etching occurs in this microetchant-substrate system so that substantially no undercutting of the copper occurs. The combination of high selectivity and no undercutting allows for a simplification of the microelectronic fabrication process and significant improvements in the design features of the microelectronic package, in particular higher density circuits. The persulfate microetchant composition is stabilized with acid and phosphate salts to provide a process that is stable, fast acting, environmentally acceptable, has high capacity, and can be performed at room temperature. A preferred etchant composition is 100 gm/liter sodium persulfate, 3 volume % phosphoric acid and 0.058 molar sodium phosphate dibasic.